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Jeffrey D. Myers  
Peacock, Myers & Adams, P.C.  
P.O. Box 26927  
Albuquerque, NM 87125-6927

EXAMINER

PATEL, PARESH H

ART UNIT PAPER NUMBER

2829

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/738,044

Applicant(s)

BUTLER, BRIAN D.

Examiner

Paresh Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,6,14-18,21,22,25 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-13,19,20,23,24,26 and 27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 09 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### 1. *Election/Restrictions*

2. Applicant's election without traverse of species of Fig. 6 (claims 1, 4, 5, 7-13, 19, 20, 23, 24, 26 and 27) in Paper No. 11 is acknowledged.

### 3. *Response to Arguments*

4. Applicant's arguments filed 03/03/2003 in Paper no: 8 have been fully considered but they are not persuasive.

5. With respect to claims 1 and 23 applicant argues that "one of ordinary skill in the art would not have looked to Kerschner for means to improve the device of Mellitz". Examiner disagrees because Kerschner at column 9, lines 1-18 discloses that test probe could be mounted on robot arm of robot, wherein robot is programmed for the coordinates of each the lead connector or trace for testing conductivity and therefore probe and test system of Mellitz can be made automatic with robot of Kerschner as explained in last office action. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., accurately placing the two points (in X, Y, and Z axes) automatically so that they touch without damaging electrical components) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. With respect to claims 4-5, applicant argues that "neither reference discloses or

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suggests a probe assembly changing station". Examiner disagrees because in claim 4, Examiner has cited Sinsheimer reference, which suggest the use of a probe assembly changing station, and a holder (an autoloader), which can be used to support and store the probes during testing of an electrical component. Applicant also argues that "Sinsheimer does not disclose but rather teaches away from a probe assembly changing station. Rather, it teaches a manual method and apparatus for exchange of a probe cards". Examiner disagrees because providing automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. See *In re Venner*, 120 USPQ 192. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a start position at which probe cards can be manually changed) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

7. With respect to claim 8, applicant argues that Mellitz does not mimic electrical characteristic of a coaxial structure. Examiner disagrees because Mellitz clearly discloses that coaxial cable 40, similar to coaxial cable 12, is used to terminate the referee impedance standard 38 at lines 66-67 of column 4 (also see disclosure on page 11, lines 12-15 of this application).

8. With respect to claim 10, applicant argues that "Kerschner does not discuss or suggest importing CAD data to automatically generate test plans for a circuit (an electrical component)". Examiner disagrees because Kerschner discloses programming

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the robot for coordinate of an electrical component which suggest that means for automatically planning testing of the electrical component by importing CAD (stores coordinate of an electrical component) data.

9. With respect to claim 7, applicant argues that "none of the references, including Bottman, provide or suggest the capability for either the claimed accuracy of measurements nor testing traces as short as 0.5 inches". Examiner disagrees because, Bottman's DUT 52 in the form of a twisted wire pair transmission line 12 with length of 50 feet includes 0.05 inches as claimed.

10. With respect to claims 11, 19 and 26, applicant argues that "one of ordinary skill in the art would not look to Cram for solution in TDR technologies ... has nothing to do with testing of electronic circuitry". Examiner disagrees because Cram's system for claimed invention can be used with system of Mellitz and/or Kerschner because they all use TDR technologies and can be modified to save data as claimed.

11. With respect to claims 12, 13 and 24, applicant relies on argument of claims 4 and 5. Examiner again disagrees for the same reason as stated in claims 4-5 above.

12. With respect to claims 20 and 27, applicant relies on argument of claims 7. Examiner again disagrees for the same reason as stated in claim 7 above.

**13. Claim Rejections - 35 USC § 103**

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1, 5, 8-10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz (US 5498965) in view of Kerscher et al. (US 5498964).

Regarding claims 1 and 23 Mellitz discloses a robotic domain reflectometry test system [fig. 1] comprising: domain reflectometry instrumentation [element 10 of fig. 1]; and a passive, high frequency probe assembly [element 14 of fig. 1] comprising a signal probe [pin of element 14 near element 31 of fig. 2] and a ground probe [pin of element 14 near element 30 of fig. 7] having a fixed, non-adjustable pitch [pins of element 14 of fig. 2 and 7 and lines 11-15 of column 3], said probe assembly being electrically connected to said domain reflectometry instrumentation [see element 14 and 10 of fig. 1].

Mellitz discloses all the essential elements of the claimed invention except for a robotic arm to move probe assembly to test an electrical component. Kerscher et al. (hereafter Kerscher) discloses a robotic arm to move probe assembly to test an electrical component [element 1104 of fig. 11 and lines 1-18 of column 9]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Mellitz and to include robotic arm as taught by Kerscher for the purpose of improving testing speed and efficiency.

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Regarding claim 8, Mellitz discloses probe assembly mimics electrical characteristics of a coaxial structure [lines 56-67 of column 4 and 1-6 of column 5].

Regarding claim 9, Mellitz discloses a system, which can test transmission line on printed wiring board. It is obvious to test components comprising dimensions of between approximately 5.25 inches x 0.5 inches and 36 inches x 28.5 inches using Mellitz disclosed a system.

Regarding claim 10, Kerschner discloses additionally comprising a robotic control system comprising means for automatically planning testing of the electrical component by importation of computer aided design data for the electrical component [lines 1-18 of column 9].

16. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Sinsheimer et al. (US 5471148).

Regarding claim 4, the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for additionally comprising a probe assembly changing station accessible by said robotic arm, said probe assembly changing station comprising holders for a plurality of probe assemblies. Sinsheimer et al. (hereafter Sinsheimer) discloses a probe assembly changing station and a holder [lines 1-6 of column 3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and

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include a probe assembly changing station and a holder as taught by Sinsheimer for the purpose of supporting the probe during testing of an electrical component.

Regarding claim 5, Kerscher discloses a robotic control system comprising means for directing said robotic arm to acquire from said probe assembly changing station a probe assembly having a correct pitch for testing of test points of the electrical component having a same pitch [lines 1-18 of column 9].

17. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Mellitz as applied to claim 1 above, and further in view of Bottman (US 5633801).

Regarding claim 7, the combination Kerscher and Mellitz discloses all the essential elements of the claimed invention except for a length of trace between 0.5 inch and 150 feet. Bottman discloses a length of trace between 0.5 inch and 150 feet [lines 23-27 of column 9].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and use a length of trace between 0.5 inch and 150 feet as taught by Bottman, so as to measure electrical characteristic of electrical trace at any length using TDR.

Kerscher, Mellitz and Bottman disclose all the essential elements of the claimed invention except for a test trace having standard deviation of test result impedance is 0.03 ohms or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Kerscher, Mellitz and Bottman and use a standard deviation of test result impedance is 0.03 ohms or less, since it has been held that where the general condition of a claim are disclosed



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in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

18. Claims 11, 19 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Kerscher and Mellitz as applied to claim 1 above, and further in view of Cram et al. (US 5631562).

Regarding claims 11, 19 and 26 the combination of Kerscher and Mellitz discloses all the essential elements of the claimed invention except for a system records impedance and propagation delay and calculates a dielectric constant for each test point of the electrical component. Cram et al. (hereafter Cram) discloses a system records impedance and propagation delay and calculates a dielectric constant for each test point of the electrical component [see lines 7-15 of column 10 and 50-67 of column 12 and 1-12 of column 13]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include storing and calculating device as taught by Cram. The ordinary skill artisan would have been motivated to modify the combination of Kerscher and Mellitz to retrieve saved data for comparison during testing an electrical component.

19. Claims 12 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerschner in view of Sinsheimer.

Regarding claims 12 and 24 Kerschner discloses: a robotic arm [element 1104 of fig. 11] and high-frequency probe assembly [element 606 of fig. 11].

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Kerscher discloses all the essential element of the claimed invention except for a probe assembly changing station accessible by said robotic arm, said probe assembly changing station comprising holders for a plurality of probe assemblies. Sinsheimer et al. (hereafter Sinsheimer) discloses a probe assembly changing station and a holder [lines 1-6 of column 3].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz in view of Kerscher and include a probe assembly changing station and a holder as taught by Sinsheimer for the purpose of supporting the probe during testing of an electrical component.

20. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kerscher and Sinsheimer as applied to claim 12 above, and further in view of Mellitz.

Regarding claim 13, the combination of Kerscher and Sinsheimer discloses all the essential elements of the claimed invention except for said probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch. Mellitz discloses probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch [element 14 of fig. 2 and 7].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify test system as taught by Kerschner in view of Sinsheimer to include probe assemblies comprises a passive, high frequency probe assembly comprising a signal probe and a ground probe having a fixed, non-adjustable pitch as taught by Mellitz, so as to obtain longer life from test probe by reducing wear and tear.

21. Claims 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mellitz in view of Kerscher and Bottman.

Regarding claims 20 and 27 Mellitz discloses a robotic domain reflectometry test system [fig. 1] comprising: domain reflectometry instrumentation [element 10 of fig. 1]; and a passive, high frequency probe assembly [element 14 of fig. 1] comprising a signal probe [pin of element 14 near element 31 of fig. 2] and a ground probe [pin of element 14 near element 30 of fig. 7] having a fixed, non-adjustable pitch [pins of element 14 of fig. 2 and 7 and lines 11-15 of column 3], said probe assembly being electrically connected to said domain reflectometry instrumentation [see element 14 and 10 of fig. 1].

Mellitz discloses all the essential element of the claimed invention except for a robotic arm to move probe assembly to test an electrical component and a length of trace between 0.5 inch and 150 feet and a test trace having standard deviation of test result impedance is 0.03 ohms or less.

Kerscher discloses a robotic arm to move probe assembly to test an electrical component [element 1104 of fig. 11 and lines 1-18 of column 9].

Bottman discloses a length of trace between 0.5 inch and 150 feet [lines 23-27 of column 9].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system taught by Mellitz to include robotic arm as taught by Kerscher and a length of trace between 0.5 inch and 150 feet as taught by Bottman, so as to obtain faster operation of testing electrical components.

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Kerscher, Mellitz and Bottman disclose all the essential element of the claimed invention except for a test trace having standard deviation of test result impedance is 0.03 ohms or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the test system as taught by Kerscher, Mellitz and Bottman and use a standard deviation of test result impedance is 0.03 ohms or less, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

## **22. Conclusion**

23. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

24. Any inquiry concerning this communication or earlier communications from the


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examiner should be directed to Paresh Patel whose telephone number is 703-306-5859. The examiner can normally be reached on M-F (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Paresh Patel  
May 1, 2003



KAMMIE CUNEO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600